



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of

Applicants : Kurt RYF et al)

Application No.: 09/879,187)

Filed : June 13, 2001)

For : METHOD FOR PRODUCING A)
FUNCTIONAL, HIGH-)
ENERGETIC MATERIAL)

Attorney Docket: 39021-172671)

PRELIMINARY

AMENDMENT

October 9, 2001

CUSTOMER NO. 26694



U.S. PATENT & TRADEMARK OFFICE

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Please amend the above-identified application as follows:

IN THE CLAIMS:

3. (amended) A method according to one claim 1,
characterized in that the grain has a cylindrical structure
with a diameter to length ratio of between 0.5 and 2.0, an
outside diameter between 0.5 and 10 mm and, in particular,
contains at least one hole, preferably several holes, with a
hole diameter between 0.03 and 0.7 mm.

FEE enclosed: \$ NONE
Please charge any further fee to Dep. Acct. 22-0261

5.(amended) A method according to claim 1, characterized in that a diffusion depth in the range of 100-500 μm is generated.

6.(amended) A method according to claim 1, characterized in that a solution or emulsion of the high-energy plasticizer in an organic solvent is added to a mixture of untreated green powder in water, which is followed by the admixture of a solution or emulsion of the deterrent in water, wherein preferably the admixture of the solution or emulsion of the high-energy plasticizer in an organic solvent and the solution or emulsion of the deterrent in water occurs at a temperature between 20-85 °C.

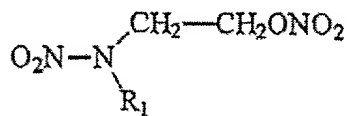
8.(amended) A method according to claim 6, characterized in that the green powder is placed into 1 to 5 times the amount by weight of water.

9. (amended) A method according to claim 6, characterized in that once the process of adding the solution or emulsion of the deterrent is completed, the pressure in the reactor tank is reduced to 400-800 mbar during a period

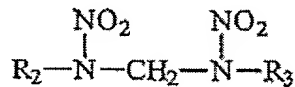
of 2-6 hours and the remaining liquid components are allowed to drain out through a strainer in the bottom of the reactor and that the resulting powder mass is dried with warm air.

10. (amended) A method according to claim 1, characterized in that 0.01-2% graphite is added in a polishing drum to the dried powder mass to obtain a bulk propellant powder with a bulk density > 1000 g/l.

11. (amended) A method according to claim 1, characterized in that the high-energy plasticizer is nitroglycerine or diethylene glycol dinitrate or, in particular, is provided with the structure I or II with $R_1 =$ C_1 - C_{10} -alkyl, C_1 - C_{10} -alkoxy or aryl, R_2 and R_3 independent of each other C_1 - C_5 -alkyl or C_1 - C_5 -alkoxy and is used in amounts of 5-20% relative to the green powder.



(I)



(II)

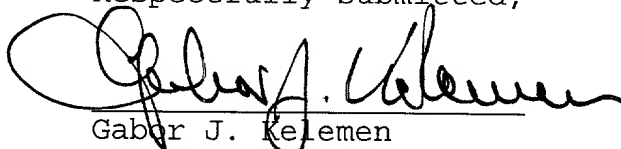
13. (amended) A method according to claim 1, characterized in that an organic ether and ester compound with a molecular weight of between 100-100'000 is used as polymeric deterrent.

Attached hereto is a marked-up version of the changes to the claims by the current Amendment. The attached page is captioned "Version with markings to show changes made".

REMARKS

The purpose of this Preliminary Amendment is to eliminate the multiple dependency of the claims.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 3, 5, 6, 8, 9, 10, 11 and 13 have been amended as follows:

3. (amended) A method according to ~~one of the claims 1~~
~~or 2~~ claim 1, characterized in that the grain has a
cylindrical structure with a diameter to length ratio of
between 0.5 and 2.0, an outside diameter between 0.5 and 10
mm and, in particular, contains at least one hole, preferably
several holes, with a hole diameter between 0.03 and 0.7 mm.

5. (amended) A method according to ~~one of the claims 1~~
~~to 4~~ claim 1, characterized in that a diffusion depth in the
range of 100-500 μm is generated.

6. (amended) A method according to ~~one of the claims 1~~
~~to 5~~ claim 1, characterized in that a solution or emulsion of
the high-energy plasticizer in an organic solvent is added to
a mixture of untreated green powder in water, which is
followed by the admixture of a solution or emulsion of the
deterrent in water, wherein preferably the admixture of the

solution or emulsion of the high-energy plasticizer in an organic solvent and the solution or emulsion of the deterrent in water occurs at a temperature between 20-85 °C.

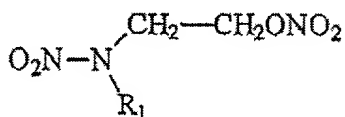
8. (amended) A method according to ~~one of the claims 6 or 7~~ claim 6, characterized in that the green powder is placed into 1 to 5 times the amount by weight of water.

9. (amended) A method according to ~~one of the claims 6 to 8~~ claim 6, characterized in that once the process of adding the solution or emulsion of the deterrent is completed, the pressure in the reactor tank is reduced to 400-800 mbar during a period of 2-6 hours and the remaining liquid components are allowed to drain out through a strainer in the bottom of the reactor and that the resulting powder mass is dried with warm air.

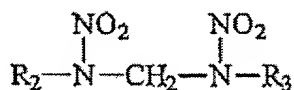
10. (amended) A method according to ~~one of the claims 1 to 9~~ claim 1, characterized in that 0.01-2% graphite is added in a polishing drum to the dried powder mass to obtain a bulk propellant powder with a bulk density > 1000 g/l.

11. (amended) A method according to ~~one of the claims 1 to 10~~ claim 1, characterized in that the high-energy

plasticizer is nitroglycerine or diethylene glycol dinitrate or, in particular, is provided with the structure I or II with $R_1 = C_1-C_{10}$ -alkyl, C_1-C_{10} -alkoxy or aryl, R_2 and R_3 independent of each other C_1-C_5 -alkyl or C_1-C_5 -alkoxy and is used in amounts of 5-20% relative to the green powder.



(I)



(II)

13. (amended) A method according to ~~one of the claims 1 to 12~~ claim 1, characterized in that an organic ether and ester compound with a molecular weight of between 100-100'000 is used as polymeric deterrent.